

want of manure, and their fields in consequence soon become impoverished, and do not yield a suitable return for the care and labour which are bestowed upon them.

Thus at each of these places, with the exception of Leo, many fields once under cultivation are now left barren, and their owners have been compelled to seek that subsistence for their families in some more favoured spot, which their native soil denied them.

THOMAS HUTTON, *Capt.*

CANDAHAR,
8th December, 1839.

*Assistant Paymaster and Commissariat
Offit. S.S.F.*

ART. III.—*Notes on various Fossil Sites on the Nerbudda ; illustrated by specimens and drawings.*

In the following paper I propose to place on record the progress made in fossil discoveries from Hoshungabad up the Nerbudda river, to Jubulpoor, a distance of some 200 miles.

Hoshungabad has already been brought to the notice of the Society as a large deposit, a field zealously followed up by Major Ouseley, then in charge of that district, by whose exertions the upper jaw now laid before the Society has been brought to light, having served for years, unknown, as a Dhobee's board for washing clothes on, ere a cognoscent eye lit upon it; for at first, it had the appearance only of an oblong square mass of the conglomerate of the river, excepting at one small point, which led to its development and present form. I am sorry to say that some of the teeth were injured in entrusting the chiselling to a country gentleman, whose geological notions of matrix and fossil, were not matured. The teeth of this elephantine head are thought by a friend of mine, to belong to that species denominated African.

The second specimen laid before the Society, is that of a slender tusk, imbedded in the conglomerate of the river, the several pieces of which, joined together, amount to a length of five feet nine inches and a half. To what animal did this belong? The portion of tusks of elephants that we possess, being at least treble the present in circumference.

Next are drawings No. 3 and 9, frontal and base of a Buffalo skull, from the same locality; exhibiting in one, the condyles of the foramen magnum, orbit; portion of horn, and general base of the skull; the other shewing the massy forehead, (nearly eleven inches between the orbits), and angle of the horn in contrast with the Bovine skull to be noticed hereafter.

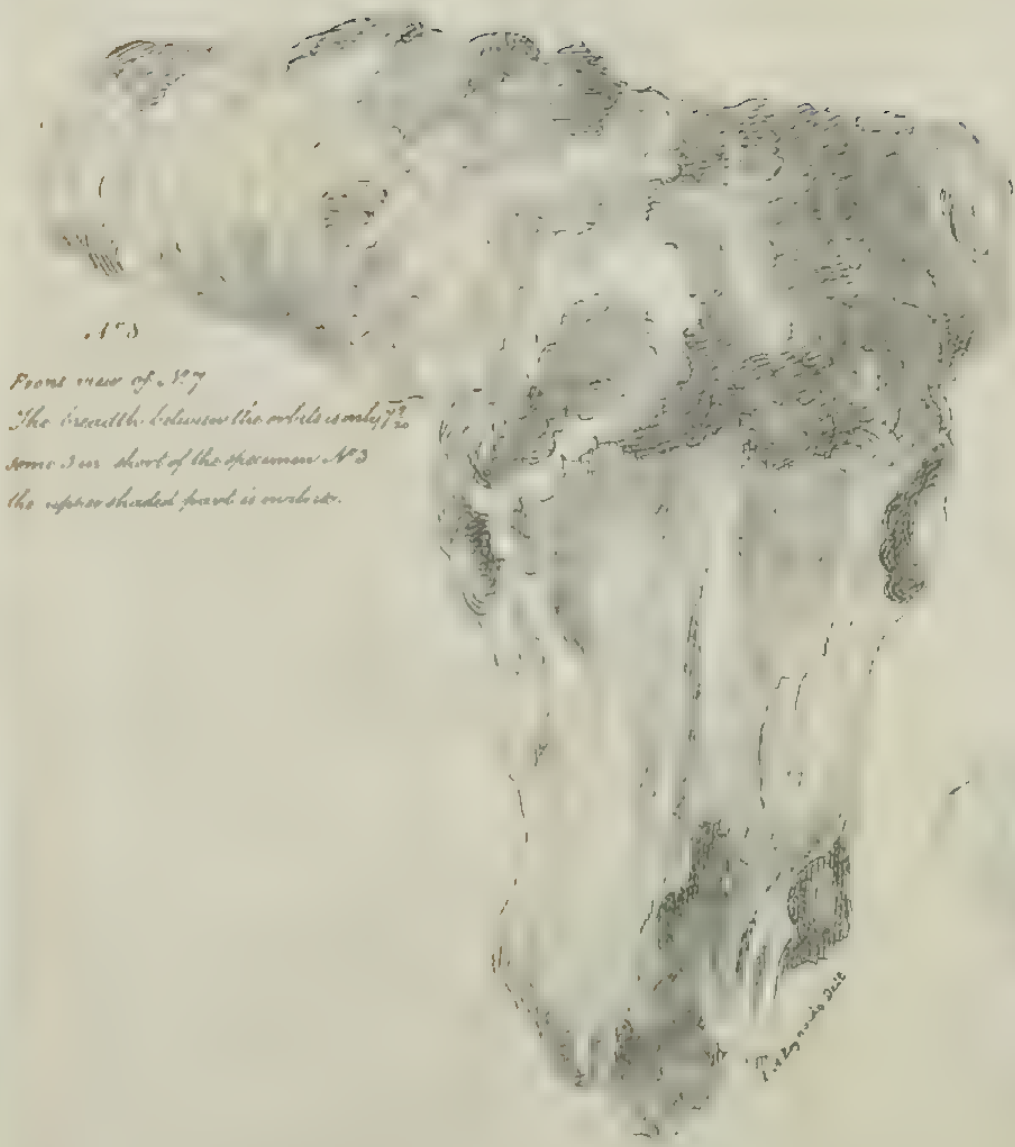
Fossil Buffalo-head from
Asungatad, in the collection
of Mr. Traber

N^o 3

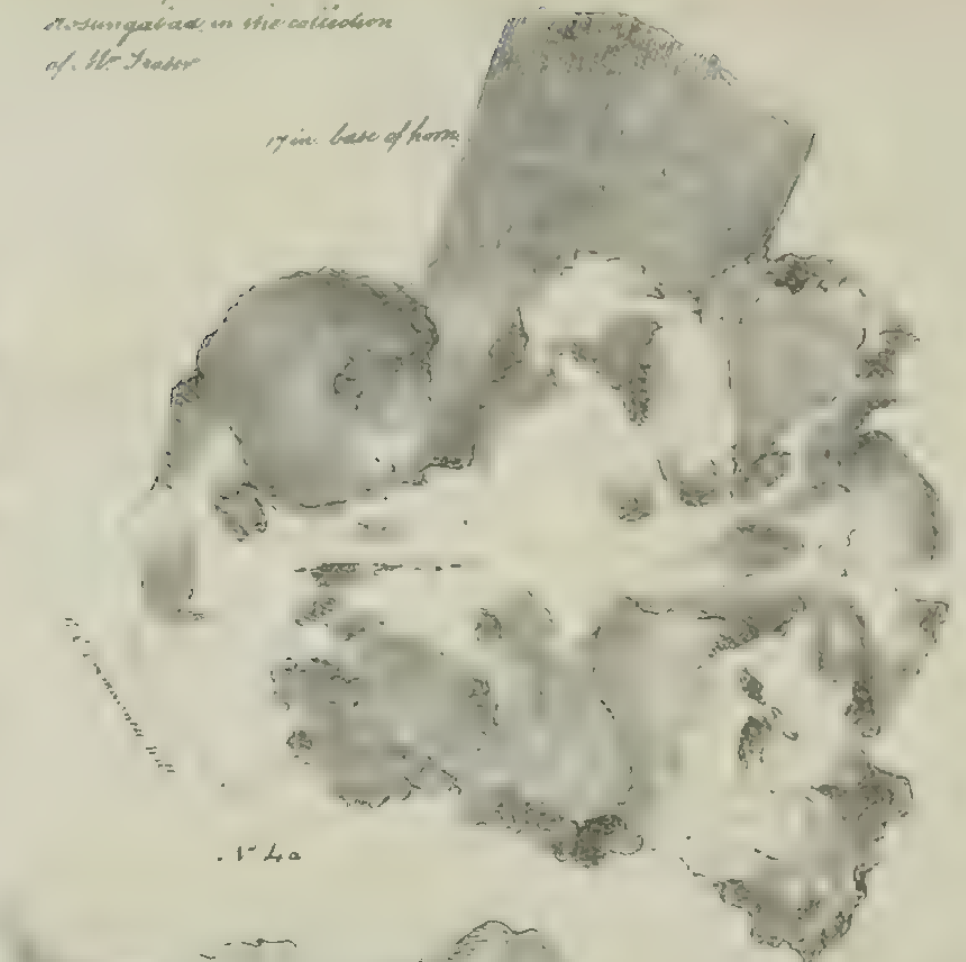
17 in. base of horn

Found at *Georapoo* on the *Shopal* and *Chowpukka*
N or right bank *Arbudda* River.
215 B 17 1/2 inches *For. Mag* 1 1/2 in
External left molar B breadth 1 1/2 in
— *dial length* 1 3/4 in
Distance between 215 B 2 in

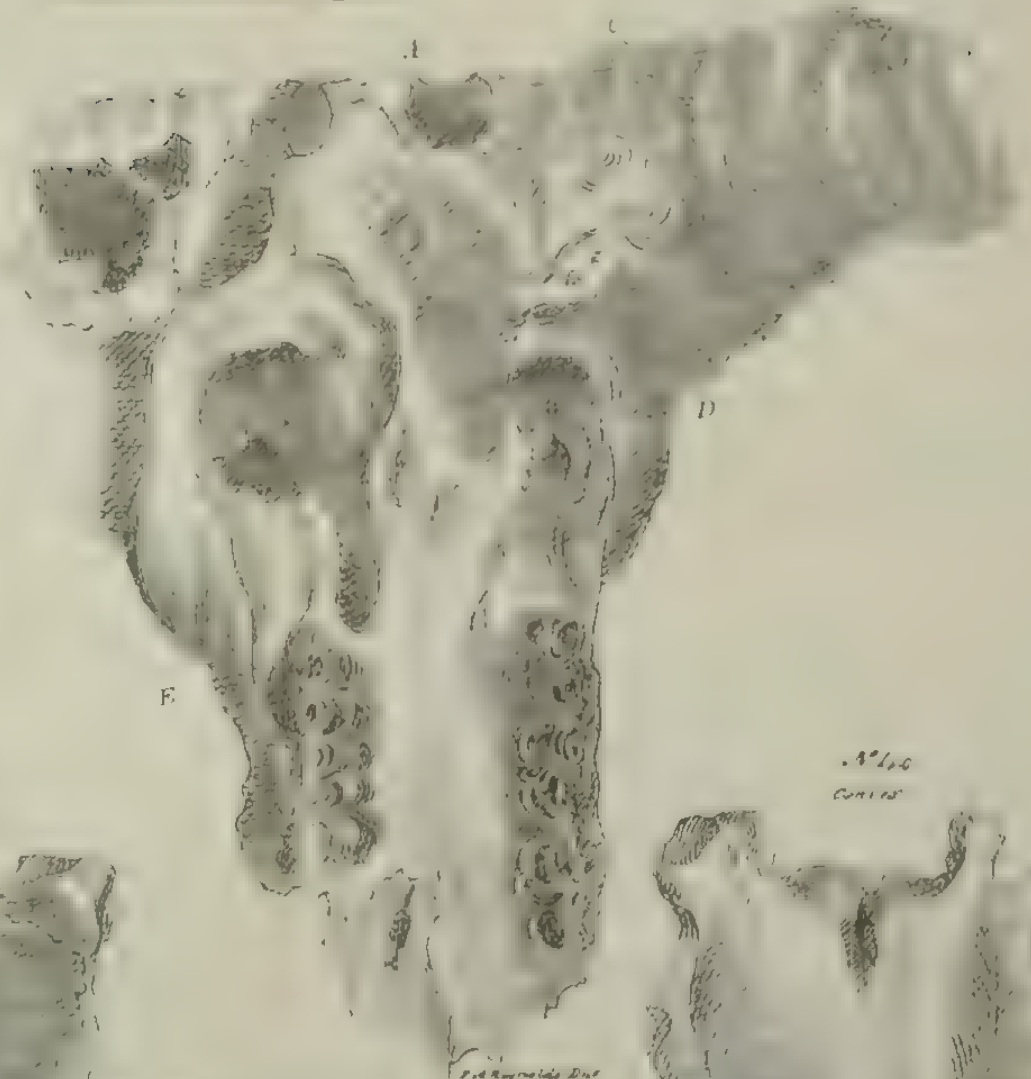
N^o 4



N^o 3
Front view of N^o 3
The breadth between the orbits is only 7/10
some 3 in short of the specimen N^o 3
the upper shaded part is overcast.



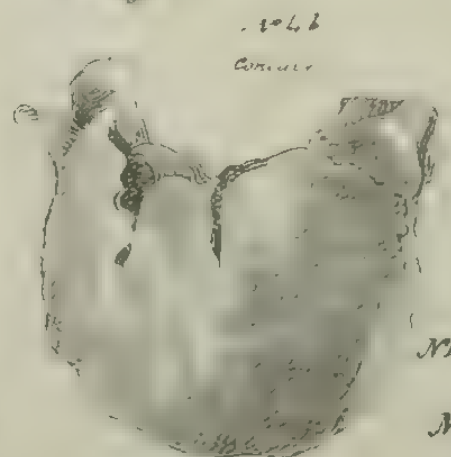
N^o 4



N^o 4



N^o 4a
Length 1 1/2 in
Width 1 1/2 in
Depth 1 1/2 in



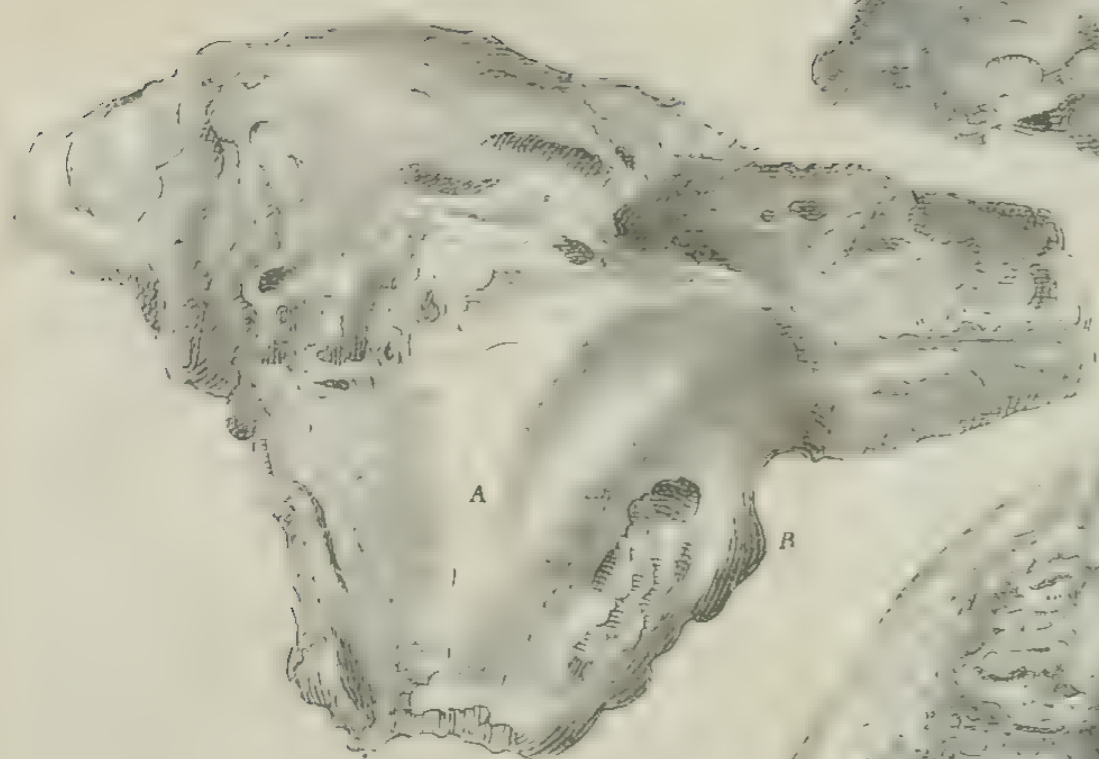
N^o 4b
Concave

N^o 4b
Length 1 1/2 in
Width 1 1/2 in
Depth 1 1/2 in

N^o 4c
External left molar from Asungatad in the collection
of Mr. Traber
N^o 4c External left molar from Asungatad in the collection
of Mr. Traber and another view of the same.



.119



Frontal view of A.S. from A to B. breadth 5 5/8 inches, or very nearly 11 inches from orbit to orbit

N. 70'



Fossil skull
Found at Belkhorat, left bank.
Vicinity near Bhand Ghat
October 1839.

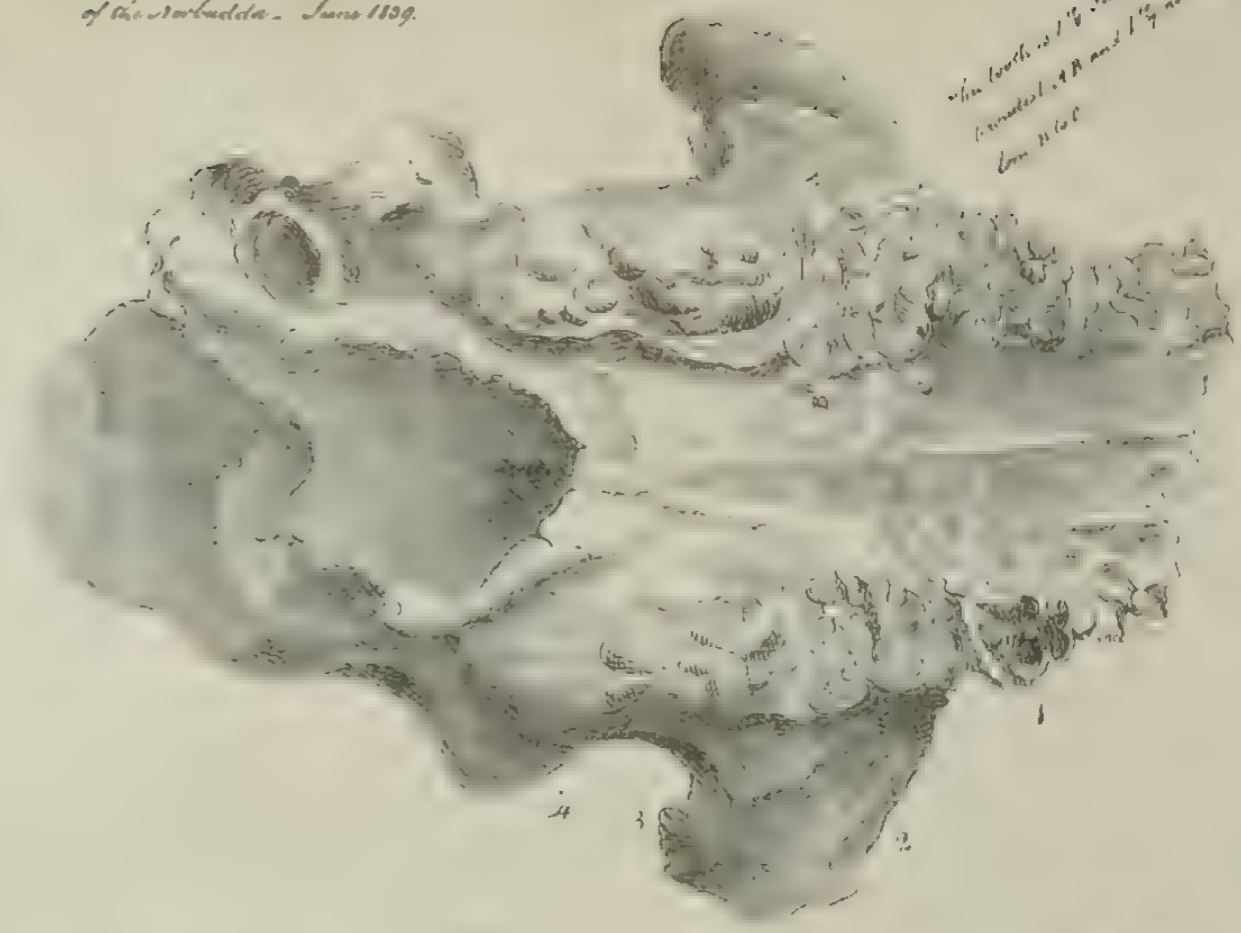
.115



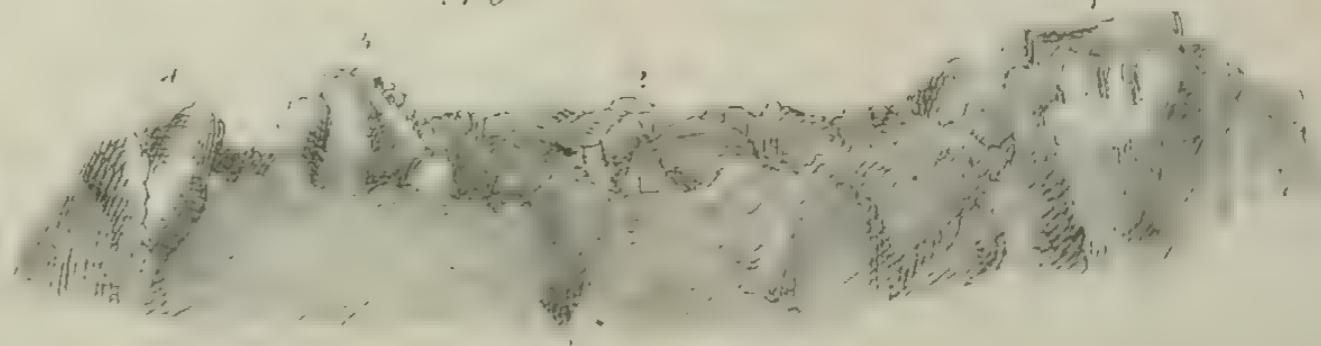
Found near Bhand Ghat, Kumbudda. May 1839.

.114

Found near Bhand Ghat, vic. base
of the Kumbudda. June 1839.



.110



Natural size.
The jaw is so regularly fractured that it gives representation

No. 4, are drawings of the vertebræ of the Mammoth ; the centre one, which is extremely perfect, was found imbedded in the same matrix as the foregoing, near the village of Bikore, some fifteen miles up the river from Hoshungabad. On the same paper a convex and concave view of another vertebra of considerably larger dimensions has been annexed, with their different measurements on the same scale, shewing their relative size. The latter was found in this neighbourhood.

No. 6, is portion of a ruminant jaw from near Niaghurreea, on the Barunj Nulla, and about a kos from Beltharee Ghat,* on the Nerbudda. The specimens brought in have been chiefly similar jaws and cylindrical bones of either buffalo or bovine genus. This site has not yet been visited by us.

No. 7, a drawing of a Bovine skull, exhibiting some of the molar teeth. No. 8, is a frontal view of the same. This skull was for a long time unique, and was dug up at Heerapoor, on the right bank of the Nerbudda, at the junction of our boundary and the Bhopul state ; but since this, numerous skulls from near Jhansee Ghat have been sent in ; they are characterized by very large molars, and a great squareness of the occiput, a point not shewn in these drawings ; the horn is imbedded in matrix, so that its actual circumference is not easily determined, but it appears to fall short of the buffalo skull No. 3, and as it does considerably in breadth of forehead.

No. 10, 11, 12, are specimens from Brimhan Ghat, of two skulls and a cylindrical bone. This site was first brought to notice by myself in 1833, subsequently explored by Captain M. Smith, then in charge of the Saugor district, and latterly by Mr. C. Fraser, the Agent. The chief specimen† was the head of a mammoth ; the dimensions of which, as compared with a recent skull of an animal seven feet high, were enormous. The foramen magnum of the occiput was three inches and a half ; diameter of tusk at base, six and a quarter inches ; and as it stood on the occipital condyles, the height was thirty-three inches ; breadth of the molars four inches. The fossil remains here have been chiefly those of the elephant and bovine classes.

From Brimhan Ghat, proceeding upwards, we come to Sagounee and its neighbourhood—sites from which I sent numerous specimens that have been laid before the Society, and among them a buffalo head with horns (a delineation of which was promised in my preceding communication) with one sent down by Serjeant Dean from the Jumna.

* From this Ghat, in 1834, I forwarded fossil specimens, pronounced to be those of a horse.

† It has been sent to Capt. Cautlay for comparison with those of the Sivalik range.

Our next site is Jhansee Ghat, where the bivalves (drawings of which were lately forwarded for inspection) have been found. This place and its neighbourhood has yielded a large collection of fossils, but chiefly buffalo and bovine; vertebræ and leg bones of the first, and large skulls of the latter, bearing the same character as that delineated in No. 7. From this ford all the way up the river fossils have been found. At the Jogee Ghat, three miles below Berah Ghat, the upper portion of the head of a young hippopotamus was discovered, as shewn in No. 14. The upper coloured drawing gives a view of the entire fossil on a reduced scale, and the pencil one below a profile, natural size, from the anterior to the posterior molars of the left side. This is the first and only one of the kind; almost all our collections being derived from the elephant, horse, buffalo, and latterly a large bovine class, as noticed before.

In the ravines of the Nerbudda, close to Berah Ghat a fine lower jaw of a mammoth was excavated and brought in, of which No. 15 gives an accurate facsimile, and some idea of the stupendous animal it was originally attached to.

Above Jubulpoor, as far as our present researches extend, but few fossil remains of quadrupeds have been found, the perfect head of a horse (drawings of which were laid on the table some two years ago) forming one of the few exceptions.

From Chewlea upwards, fossilized trees of various kinds and shells alone reward the zeal of the philo-geologist.

For the interesting fossil discoveries from Jubulpoor to Jhansee Ghat the lovers of this pursuit are indebted to Mr. C. Fraser, the present Agent to the Governor General in these territories, who from the time of his rejoining this agency, has been most indefatigable in bringing to light these treasures of a former age.

I cannot pass over the aid I have derived in my illustrations* of the fossils for the present notes (as well as those lately submitted of the different kinds of shells, chiefly found in these territories,) without saying how much I am indebted to the pencil of Captain Reynolds, whose kindness and readiness to devote his time and talent to the delineation of the numerous specimens sent to him, have been unwearied.

N. B. Just as the foregoing was concluded, a fossil crab was brought in from near Jhansee Ghat, a drawing, No. 16, natural size, exhibits this as yet unique specimen.

JUBULPOOR, 1st Nov., 1839.

G. G. SPILSBURY.

* No. 3 is by Mr. M. C. Ommanney—not the first instance, by many, that I have had of his ability and kindness.